Contribution ID: **29**   Type: **Parallel Talk**

Simulating the lattice $SU(2)$ Hamiltonian with discrete manifolds

Tuesday, August 1, 2023 2:10 PM (20 minutes)

Numerical simulations of quantum Hamiltonians can be done representing the degrees of freedom as matrices acting on a truncated Hilbert space. Here we present a formulation for the lattice $SU(2)$ gauge theory in the so called "magnetic basis", where the gauge links are unitary and diagonal. The latter are obtained from a direct discretization of the group manifold, while the canonical momenta are built using an orthogonal transform on S_3. We discuss general considerations on the contraints of the spectrum of the free theory and the continuum manifold limit.

Topical area

Quantum Computing and Quantum Information

Primary author: ROMITI, Simone (University of Bonn)

Co-authors: JAKOBS, Timo (University of Bonn); GAROFALO, marco (University of Bonn); HARTUNG, Tobias (Northeastern University - London); JANSEN, Karl (Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen, Germany); OSTMEYER, Johann (University of Liverpool); ROLFES, Dominik (University of Bonn); URBACH, Carsten (University of Bonn)

Presenter: ROMITI, Simone (University of Bonn)

Session Classification: Quantum Computing and Quantum Information